

PAT-NO: JP403053069A

DOCUMENT-IDENTIFIER: JP 03053069 A

TITLE: DIAMOND KIND COATED MEMBER

PUBN-DATE: March 7, 1991

INVENTOR- INFORMATION:

NAME

IIO, SATOSHI

WATANABE, SHOICHI

TSUBOKAWA, MASAYA

ITO, TOSHIMICHI

ASSIGNEE- INFORMATION:

NAME

COUNTRY

IDEMITSU PETROCHEM CO LTD

N/A

NGK SPARK PLUG CO LTD

N/A

APPL-NO: JP01184376

APPL-DATE: July 17, 1989

INT-CL (IPC): C23C016/26, C04B041/87

ABSTRACT:

PURPOSE: To obtain a cutting tool, etc., free from deterioration in a diamond film even in the case of high-speed cutting and excellent in the adhesive strength of the diamond film to a base material by forming a diamond kind film on the surface of a ceramic base material composed principally of Si<SB>3</SB>N<SB>4</SB> and having specific thermal conductivity by a vapor phase process.

CONSTITUTION: A mixture prepared by using Si<SB>3</SB>N<SB>4</SB> as a principal component and also using ZrO<SB>2</SB> or MgO as sintering auxiliary and further mixing, if necessary, proper amounts of oxide ceramics,

such as zirconia, mullite, and spinel, or non-oxide ceramics, such as SiC and BN, is compacted and sintered, by which a ceramic base material having  $\geq 40\text{W/m.K}$  thermal conductivity is produced. Subsequently, a gaseous mixture of carbon-containing gas, such as various hydrocarbons, methane halide, acetone, and trimethylamine, and hydrogen gas is excited and brought into contact with the surface of the above ceramic base material, by which a super hard diamond film can be formed on the surface of the base material with superior adhesive strength.

COPYRIGHT: (C)1991,JPO&Japio